

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings of claims in the application:

**Listing of Claims:**

- 1   **Claim 1.**       (Currently Amended) A method of extracting structural information from a  
2   multidimensional NMR data set for a selected macromolecule in an intact biological  
3   compartment,  
4       wherein said structural information is a representation of a first conformation of said  
5       selected macromolecule at a resolution sufficient to determine the relative locations  
6       of two or more atoms;  
7       wherein said selected macromolecule is labeled with a NMR-detectable nucleus, such  
8       that said NMR-detectable nucleus is present in said selected macromolecule in an  
9       amount greater than is naturally abundant in said macromolecule;  
10      said method comprising:  
11           (a) contacting said intact biological compartment with radio frequency energy,  
12                thereby producing an excited NMR-detectable nucleus;  
13           (b) collecting radio frequency data from said excited NMR-detectable nucleus,  
14                thereby producing said NMR data set, and  
15           (c) analyzing said multidimensional NMR data set to extract said structural  
16                ~~information from the NMR data set~~ for said selected macromolecule.
- 1   **Claim 2.**       (Previously Presented) The method according to claim 1, wherein said selected  
2   macromolecule is overexpressed in said intact biological compartment.
- 1   **Claim 3.**       (Previously Presented) The method according to claim 1, wherein said NMR-  
2   detectable nucleus is present in an amount detectable by NMR of said intact biological  
3   compartment.

1 **Claim 4.** (Original) The method according to claim 1, wherein said selected  
2 macromolecule is a member selected from the group consisting of proteins, saccharides,  
3 glycoproteins, and nucleic acids.

1 **Claims 5. - 8.** (Cancelled)

1 **Claim 9.** (Previously Presented) The method according to claim 1, wherein said selected  
2 macromolecule is further labeled with deuterium.

1 **Claim 10.** (Previously Presented) The method according to claim 1, wherein said intact  
2 biological compartment is present in a suspension.

1 **Claims 11. - 13.** (Cancelled)

1 **Claim 14.** (Currently Amended) The method according to claim 1, wherein said structural  
2 information is ~~for a first conformation of said selected macromolecule and a~~ further comprises a  
3 second conformation of said selected macromolecule.

1 **Claim 15.** (Currently Amended) The method according to claim 1, wherein said  
2 multidimensional NMR data set is acquired by a triple resonance NMR method.

1 **Claim 16.** (Original) The method according to claim 15, wherein said triple resonance NMR  
2 experiment is a member selected from HSQC and TROSY.

1 **Claim 17.** (Previously Presented) The method according to claim 1, wherein said intact  
2 biological compartment is prepared by a method comprising:

- 3 (a) transforming an unlabeled precursor of said intact biological compartment with a  
4 nucleic acid encoding said selected macromolecule, wherein said nucleic acid is  
5 operably linked to a promoter non-native to said unlabeled precursor of said intact  
6 biological compartment, thereby producing a transformed intact biological  
7 compartment;  
8 (b) incubating said transformed intact biological compartment in a medium comprising  
9 said NMR-detectable nucleus; and

10 (c) inducing said transformed intact biological compartment, thereby preparing said  
11 intact biological compartment.

1 **Claim 18.** (Previously Presented) The method according to claim 17, further comprising:

2 (d) inhibiting essentially all transcription in said transformed intact biological  
3 compartment, which is under control of promoters native to said unlabeled  
4 precursor of said intact biological compartment, while allowing transcription  
5 under control of said non-native promoter to proceed.

1 **Claim 19.** (Cancelled)

1 **Claim 20.** (Original) The method according to claim 17, wherein said medium is deuterated.

1 **Claim 21.** (Previously Presented) The method according to claim 17, wherein said intact  
2 biological compartment is a bacterial cell.

1 **Claim 22.** (Original) The method according to claim 17, wherein the non-native promoter  
2 encodes an RNA polymerase that is operable during step (d).

1 **Claim 23.** (Original) The method according to claim 17, wherein the non-native promoter is  
2 a phage promoter.

1 **Claim 24.** (Previously Presented) The method according to claim 18, wherein said  
2 inhibiting is caused by administering an inhibitor to said unlabeled precursor of said intact  
3 biological compartment in an amount sufficient to cause said inhibiting.

1 **Claim 25.** (Original) The method according to claim 24, wherein said inhibitor is  
2 rifampicin.

1 **Claim 26.** (Previously Presented) The method of claim 1, wherein the viscosity inside said  
2 intact biological compartment is at least 2 fold greater than the viscosity of pure water, wherein  
3 said viscosity inside said intact biological compartment and said viscosity of said pure water are  
4 determined at the same temperature.

1 **Claim 27.** (Previously Presented) The method of claim 1, wherein said selected  
2 macromolecule is present in said intact biological compartment at a weight percent of up to 0.3%  
3 compared to the total weight of said intact biological compartment.

1 **Claim 28.** (Currently amended) The method of claim 1, wherein said selected  
2 macromolecule is present in said intact biological compartment at a weight percent of up to 50%  
3 compared to the total weight of said intact biological compartment.

1 **Claim 29.** (Original) The method of claim 1, wherein said selected macromolecule has a  
2 molecular weight of at least 5 kDa.

1 **Claim 30.** (Original) The method of claim 1, wherein said selected macromolecule has a  
2 molecular weight of at least 25 kDa.

1 **Claim 31.** (Original) The method of claim 1, wherein said selected macromolecule has a  
2 molecular weight of at least 70 kDa.

1 **Claim 32.** (Previously Presented) The method of claim 1, wherein said intact biological  
2 compartment is a living cell.

1 **Claim 33.** (Previously Presented) The method of claim 1, wherein said intact biological  
2 compartment is a cell that has been metabolically arrested.

1 **Claim 34.** (Original) The method of claim 1, wherein said selected macromolecule is  
2 expressed from a plasmid.

1 **Claim 35.** (Original) The method of claim 1, using a multidimensional multinuclear  
2 method.

1 **Claim 36.** (Previously Presented) The method of claim 35, wherein said multidimensional  
2 multinuclear method is an HNCA experiment.

1 **Claim 37.** (Previously Presented) The method of claim 35, wherein said multidimensional  
2 multinuclear method is an HMQC experiment.

1 **Claim 38.** (Previously Presented) The method of claim 1, wherein said intact biological  
2 compartment is a biological cell.

1 **Claim 39.** (Previously Presented) The method of claim 38, wherein said biological cell is a  
2 prokaryotic cell.

1 **Claim 40.** (Previously Presented) The method of claim 39, wherein said prokaryotic cell is  
2 an *E. coli* cell.

1 **Claim 41.** (Previously Presented) The method of claim 38, wherein said biological cell is an  
2 eukaryotic cell.

1 **Claim 42.** (Previously Presented) The method of claim 41, wherein said eukaryotic cell is a  
2 yeast cell.

1 **Claim 43.** (Previously Presented) The method of claim 41, wherein said eukaryotic cell is a  
2 mammalian cell.

1 **Claim 44.** (Previously Presented) The method of claim 43, wherein said mammalian cell is  
2 a human cell.

1 **Claims 45. - 91.** (Cancelled)